

Title	Hunting with Dogs among the San in the Central Kalahari
Author(s)	IKEYA, Kazunobu
Citation	African Study Monographs (1994), 15(3): 119-134
Issue Date	1994-11
URL	http://dx.doi.org/10.14989/68123
Right	
Type	Departmental Bulletin Paper
Textversion	publisher

HUNTING WITH DOGS AMONG THE SAN IN THE CENTRAL KALAHARI

Kazunobu IKEYA

Faculty of Letters, Hokkaido University

ABSTRACT Among the Central Kalahari San, hunting with dogs was once only of secondary importance to that with traps or bows and arrows. In recent years, hunting with bows and arrows has declined, whereas that with dogs has become more common. Dogs play an important role when the San hunt large antelopes with spears, or medium-sized animals with sticks. Hunting success depends on the hunter's skill in identifying footprints and timing for throwing the spear, and the chasing and fighting abilities of the dog. The owners of the dogs participating in a hunt share the game. Three factors can be identified for the increase in dog hunting. Firstly, dogs have increased dramatically. Secondly, dog hunting does not require hunters to learn new skills, and convenient for the San who travel long distance on foot. Thirdly, hides of medium-sized animals and dried gemsbok meat have become important source of cash in a developing commercial economy.

Key Words: Hunting with dogs; Hunting ground; San; Socio-cultural changes; Commercial economy.

INTRODUCTION

The Central Kalahari San (G//ana and G/wi), well known as hunter-gatherers, inhabit the Central Kalahari Game Reserve in Botswana, in the central part of the Kalahari Desert (Silberbauer, 1965; Tanaka, 1969). According to the reports published in the 1960's, the majority of these people depended on wild plants for most of their diet and lead a nomadic life.

Hunting with spears with the assistance of dogs was previously regarded as secondary to hunting with bow and arrow or traps. Studies in the late 1960's found that dogs were used to augment spear hunting (Tanaka, 1971), only rarely for foxes, jackals, or genets (Tanaka, 1969; Lee, 1979). In 1967, a man assisted by dogs was observed to hunt large antelopes such as gemsbok with a spear (Tanaka, 1978).

This paper will describe and analyze the current practice of hunting with dogs among the Central Kalahari San, with particular focus on the utilization and spatial perception of the hunting ground, to identify the factors involved in the increase in hunting with dogs.

I lived in the ≠Kade area of Ghanzi district in Botswana to study the San for five and a half months from August 1987 to mid-January 1988, and for five months from August 1989 to December 1989. I participated twice in the long, 5–6 day hunting trips, and more than 10 times in one-day hunting trips, to observe San hunting activity. When I did not participate in hunting trips, I collected detailed informa-

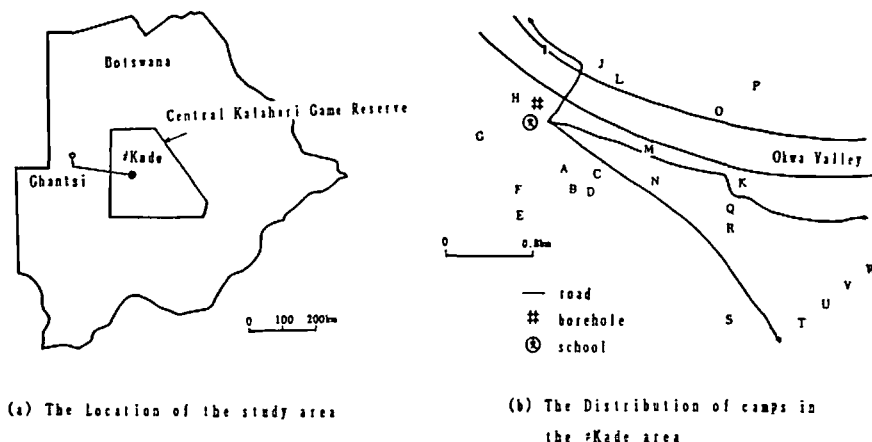


Fig. 1. The study area.

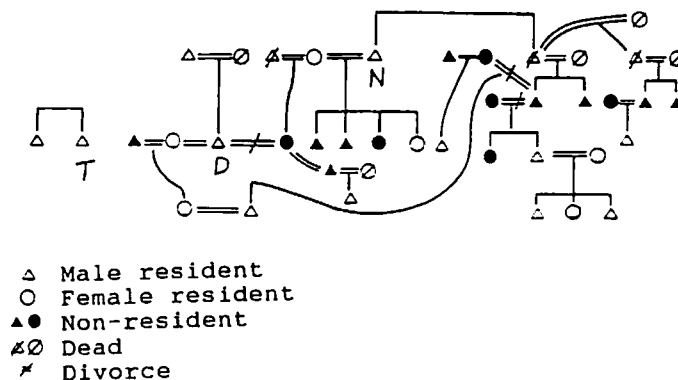


Fig. 2. Genealogy of the members of the study group in 1987.

tion, such as on the name of the participants and the hunting grounds, and the species and number of hunted animals, etc.

The ≠Kade area is located in the mid-western part of the Central Kalahari Game Reserve, about 180 km southeast of Ghantsi, the center of the District (Fig. 1). The population in the area in October 1987 was 774, of which 200 were seasonal residents who lived there only during the dry season (Ikeya, 1989). K-Camp, the main focus of my study was located 1.5 km to the east of a primary school and consisted of twelve men and six women. The camp comprised a mixture of G//ana and G//wi residents (Fig. 2). These people received maize powder distributed by the government as a staple food source, and engaged in diverse subsistence activities, such as hunting, gathering, farming and goat raising (Tanaka, 1987; Ikeya, 1993). They obtained cash by working in road construction projects and producing folk crafts (Ikeya, 1994).

HUNTING ACTIVITY IN THE ≠KADE AREA

In Botswana, the Fauna Conservation Regulations were enacted in 1979. A hunter now needs to obtain a Special Game License issued by the Wildlife Department to hunt. This law prohibits the use of guns and limits the annual number of game per person (Tanaka, 1987).

For the ≠Kade area, the number of animals hunted and the hunting methods were as follows. A total of 56 gemsboks were hunted in 1987, 37 on horseback and 19 with dogs. Twenty-two elands, 3 wildebeests and 5 kudu were hunted on horseback and 1 kudu was hunted with dogs. One hartebeest was felled in equestrian hunting and 3 in dog hunting. Immature hartebeests, duikers and steenboks were hunted with dogs and the numbers of each species were 2, 26 and 7. Of other small and medium-sized animals, duikers and steenboks were caught with traps, and genets, foxes and black-backed jackals were hunted with dogs. Hunting with bow and arrow was not performed at all.

The San selected their hunting methods according to the ecology and the behavior of game animals (Table 1). Spears were used most frequently. The San practiced four types of hunting: hunting on horseback or with dogs, both of which involve the use of spears, traps, and springhare hunting. These methods were used singly or in combination. Osaki (1984) reported that in equestrian hunting gemsboks were hunted by throwing spears and elands by thrusting spears. According to my observation, wildebeests were also hunted with thrown spears and kudus were hunted with thrust spears. Although young hartebeests, springboks, and duikers could be hunted with dogs, fully grown animals of these species run too fast, and are captured only by trapping.

Hunting activities varied with the seasonal changes and the condition of daily rainfall. The hunting activities were divided into three types, namely, overnight hunt-

Table 1. Types of hunting methods by the animals hunted.

Animal	Hunting methods
Gemsbok	A ₁ B ₁
Eland	B ₂
Kudu	B ₂
Wildebeest	B ₁
Giraffe*	B ₂
Hartebeest	A ₃
Jackal	A ₃
Fox	A ₃
Wildcat	A ₃
Steenbuck	C, A ₃
Bushduicker	C, A ₃
Springbuck	A ₃
Springhare	D

A: Hunting with dogs; B: Equestrian hunting; C: Trapping; D: A long stick; 1: A throwing spear; 2: A thrusting spear; 3: Sticks; *: Giraffe hunting was not observed during the study period.

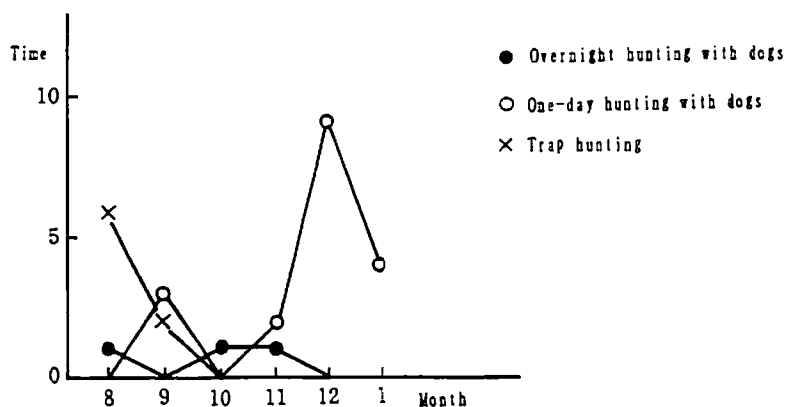


Fig. 3. The frequency of hunting methods for each month.

ing with dogs, one-day hunting with dogs, and trapping. Figure 3 shows the monthly frequency of each type of hunting activity from August 1987 to January 1988 observed in Camp K.

Traps were set frequently in August, but trapping ended in September. In December, one-day hunts with dogs came to be carried out more frequently. In October, November and August, when trapping was carried out frequently, a 5–6 day hunting trip with dogs was carried out each month.

The relationship between rainfall and the frequency of each hunting type was observed (Table 2). Trapping ended in early September, with the start of the rainy season, apparently because trapped animals would easily pull out the traps from the wet soft sand and get away.⁽¹⁾ One-day hunting trips with dogs were frequent in December when duikers, steenboks, hartebeests and springboks give birth, just

Table 2. Rainy days and hunting activity.

Day	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Month	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
8	—						A	A	A	A	A						B +	C		B +	C		B +	C							B +	C
9	B +		B +				●	●	D									●	B	●	●	●	B									
10	A	A	A	A	A	A				●						● (9mm)	D												●	●	A +	D
11	A	A	A	A									●					B								B					● (0.2mm)	
12	B +				● (7mm)	● (10mm)	B +	D		B	B		●		B		● (14mm)	B		● (16mm)	B		B						B			
1		B	B	● (7mm)	B			B																								

A: Overnight hunting with dogs; B: One-day hunting with dogs; C: Trapping; D: Spring hare hunting;
 ●: Rainy day.
 Rainfall indicated in () was measured in K camp.

before the start of the rainy season. Seasonal fluctuation was not found in overnight hunting with dogs.

The domestic animals that accompanied hunting trips were dogs and donkeys. One to 11 dogs accompanied the hunters, and for horseback hunting several dogs and 1 to 3 horses were used. Donkeys were essential for transporting large skinned mammals to the camp. At times as many as 11 donkeys were utilized. When the San caught large game on a one-day hunting trip without a donkey, they went back to the settlement and returned with a donkey to where they had skinned the game.

TECHNIQUES AND ACTIVITY PATTERNS IN TWO TYPES OF HUNTING WITH DOGS

I. Gemsbok Hunting

Hunts with dogs fall under roughly two categories: hunting for gemsboks with spears, and for the young steenboks or jackals with sticks. The former was carried out mostly overnight and the latter in one-day hunting trips.

Three hunters, N, D, and T who lived in Camp K went on a 5-night, 6-day hunting trip from October 1 to 6, 1987. They traveled the first day to about 50 km east of the settlement and built a camp. The final day was spent returning to the settlement. The actual hunting period was 4 days, between October 2 and 5. Hunting was performed mostly within an 8 km radius to the east of the hunting camp (Fig. 4).

The hunting ground featured 3 types of vegetation, a mostly shrubby area with a mixture of low trees and grass, grassland and a small area of woodland. The San usually built their hunting camp in the woodland area, where the trees were over 10 m in height, to easily obtain firewood. Near the camp, they would find gemsboks foraging in the grassland or shrubby area. During the hunts, donkeys were left at the camp where the meat was dried in the sun. Hunters slept around the fire at night.

The following is an example of hunting.

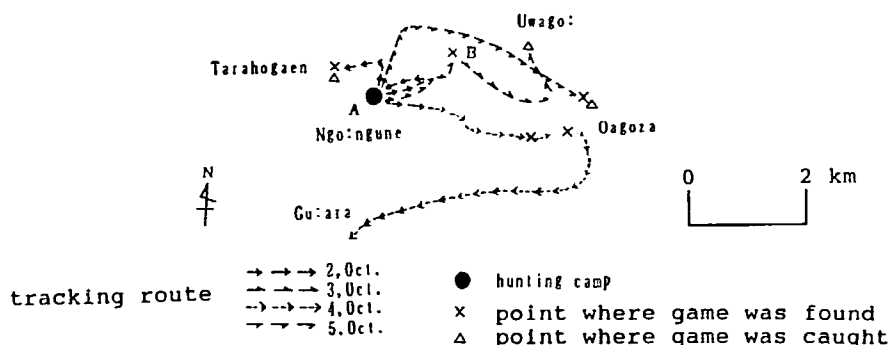


Fig. 4. Hunting ground utilization in gemsbok hunting.

[Case 1] October 3, 1987

- 7:33 a.m. The hunters left the hunting camp. They followed gemsbok footprints for about an hour.
- 8:25 a.m. A gemsbok was spotted at point B (See Fig. 4). As soon as the animal started to run, the dogs chased and surrounded it.
- 8:30 a.m. T threw the first spear. The animal began to run again. The dogs, the hunters and the author chased it. When the dogs caught up, the animal stopped.
- 8:38 a.m. D crouched in the shade of a shrub more than 10 m away and watched the dogs guard the gemsbok.
- 8:41 a.m. N said (to the author), "the gemsbok is tired. Don't get close to it, or it will flee. The dogs have not bitten the animal yet."
The author observed that the flank of the animal was red with blood, where it had been struck with the first spear.
- 8:46 a.m. The animal fled as soon as T threw the second spear. Everyone ran after the animal.
- 8:52 a.m. Everyone crouched down to a kneeling position and watched the animal.
- 8:53 a.m. T threw the third spear. The animal fled, and we all ran.
- 8:57 a.m. D said, "The dogs are not biting it," as he crouched in the shade of a low tree.
- 9:11 a.m. The dogs continued to bark at the gemsbok but did not approach it, now swinging its thin, one metre long horns.
- 9:29 a.m. D said, "The dogs are tired. None of the dogs can bite it. The gemsbok is a strong animal. It hasn't noticed us yet, but if it does, it will try to escape." The dogs had tired and stopped barking.
- 9:39 a.m. T threw the fourth spear.
- 9:42 a.m. The animal made its final move, then knelt down. But it did not die. After spears were thrown from a short distance, the animal died. The fact that two of the dogs, *Gorane* (female) and *Reizen* (male) (The dogs' names are italicized) were bleeding from their bellies suggested the intensity of the chase.

Apparent from the above case, hunting with dogs for gemsboks is composed of the following four activities: first, the hunters selected a hunting ground, then walked around to find footprints. Second, they followed the footprints. Third, they spotted and chased the animal, and as the dogs chased and fought with the animal, the hunters approached. Fourth, they threw spears and killed the animal.

In search for game, it was important to find fresh feces or very recent footprints, which indicated that the animal was not far. Usually two hours elapsed between when footprints were found and an animal was spotted. The fact that the San formerly lived on the hunting ground and were familiar with the area was also an advantage for the hunters.

In the above case, the game was a large gemsbok, and, therefore, the dogs could not fatally wound the animal upon spotting it. Because of this, the hunters had to repeatedly chase and throw spears, as many as four times, to finally kill the animal. Chasing and intimidation by the dogs played an important role. The hunt may not have been possible without the assistance of the dogs.

The success and failure of a hunt depended on the quality of the dogs, the experience of the hunters in tracing footprints, and their timing for throwing the spears.

II. Hunting Duikers and Steenboks

Hunting with dogs for young animals is different from those for adult animals, in that the hunters let the dogs bite the prey and do not dare to kill by themselves.

The activities of four hunters who went on a one-day hunting trip with 11 dogs is described below.

[Case 2] January 5, 1988

- 7:48 a.m. Four men and 11 dogs left Camp K in the ≠Kade. The dogs included those of the neighboring camp which happened to be in Camp K.
- 8:29 a.m. *Chomoo* (male) was observed to frequently exhibit courtship to *Tabane* (female). The other dogs walked along on their own.
- 8:38 a.m. The footprints of a young duiker were found and the hunting party began to follow them.
- 8:40 a.m. D's pace became faster.
- 8:47 a.m. *Chomoo* followed *Tabane*.
- 8:51 a.m. D stopped and tried to find more footprints, but failed.
- 9:17 a.m. D began to look for footprints again. There were six dogs around him and the other five, including *Tabane*, *Chogena* (female) and *Tsueta* (male), rested under a short tree and did not follow D.
- 9:22 a.m. D found footprints of a young duiker.
- 9:24 a.m. The dogs spread apart. D followed the footprints.
- 9:30 a.m. Only *Narane* (female) followed D.
- 9:34 a.m. *Chomoo* tried to mate with *Tabane*, which she refused.
- 9:43 a.m. All 11 dogs assembled.
- 9:46 a.m. The dogs spread apart again.
- 9:52 a.m. *Tabane*, *Narane*, and *Chogena* stood near N.
- 10:06 a.m. Dogs assembled again. *Chomoo* was still chasing *Tabane*.
- 10:10 a.m. When D raised his right hand and snapped his fingers, the dogs advanced swiftly.
- 10:17 a.m. The dogs ran forward, and only *Narane* stayed behind. However, the animal had apparently fled.
- 10:18 a.m. The dogs came back and gathered.
- 10:27 a.m. *Tabane* barked at *Chomoo*, who had been chasing her.
- 10:42 a.m. The young duiker was found sleeping under a tree. *Buresu* (male), walking a little ahead of the hunters, approached the animal quietly and bit it. The other dogs gathered and bit the animal. The hunter hit it with a stick. Less than one minute passed from the time when the animal was detected by *Buresu* to its kill. The legs of the dead young duiker was tied crosswise to be carried with a stick.

From Case 2, I was able to appreciate the behavior of the pack of dogs, the precise movements of each dog and the characteristics of hunting with dogs. The pack of dogs was flexible in its movements, spreading apart and gathering closely.

When the lead hunter noticed that game was near, he raised his hand high and snapped his fingers to order the dogs to gather closely. The dogs were very responsive to instructions given by the hunter, but did not necessarily move as the hunter intended. Moreover, from the behavior of each dog it is evident that each had its own character. For example, such as *Chomoo*, more enthusiastic about a female than the hunt, look useless as a hunting dog. *Narane* always stayed by the lead hunter and did not join the chase for the game.

SKINNING AND DISTRIBUTION OF GAME CARCASS

When the hunt ends successfully, the San skin the carcass on the spot and cut it up into portions to be carried off on donkeys. If the meat were left behind alone, it would be eaten by vultures and hyenas. In Case 1, the long horn of a gemsbok was detached out the base with an ax. The hide was then taken, except for the part below the knee which was cut off. Several branches with green leaves were placed under the game and to remove the hide on the other side. When this was over, the abdomen was cut open. The contents of the stomach, blood, and intestines were given to the dogs.

The lumps of meat were arranged on the hide, and placed on the donkey's back. The hunters packed the meat, which included the head, neck, and the right and left sides of the carcass, to which the fore and hind limbs were still connected, and balanced it on the donkey's back, then secured it with a piece of rope made from eland hide. The hunters whipped the two donkeys to drive them in the direction of the camp. When they arrived at the camp, they placed green branches on the ground and put the meat on them.

In the afternoon of the same day the hunters caught the game, they placed a stick horizontally at a height of about 2 m across the branches of an acacia tree. The stick was obtained in the vicinity of the hunting camp. The hunters cut the lumps of meat into thin strips several centimetres wide and about 1.5 m long. They then hung the strips to dry on the stick.

The meat dried by the next evening. About 50 strips of dried meat were made into a bundle with a rope made from the hide of the butchered animal. The meat was distributed at this point. Each bundle of meat, the hunter's share, was carried on the donkey's back to Camp K and brought to each hunter's house.

Three gemsboks were caught in hunts between October 1 and 6 in 1987, and to my knowledge, an equal amount of dried meat was distributed between N and D, the owners of the dogs that participated in the hunts. When the weight was actually measured, N received 9.8 kg and D received 9.0 kg. The difference, however, was small. After that, some meat was given to the author and T. N, the oldest, did not monopolize the meat, because D and T each provided four dogs. The donkeys used after the hunt belonged to a relative of N. The hunters did not redistribute the meat in the settlement, but sold a part of the meat for cash to Tswana-speaking visitors. Dried meat per bundle cost 20 pula (about 15 US\$).

THE CHARACTERISTICS OF HUNTING DOGS

In this section, the formation of a pack of hunting dogs is examined. I will first summarize the individual behavior of the dogs, and then describe how they are raised by the owners.

It is evident that not all the dogs who accompanied a hunt were talented or well-trained.⁽²⁾ *Buresu* in Case 2 is a talented dog, as is suggested by the fact that he found the young duiker first. *Chomoo* only chased after female dogs, and was not suited for hunting. When the author and the hunters encountered lions on another hunting trip, the three dogs, *Tabane*, *Buresu*, and *Tsueta* kept barking at the lion until it went away. These dogs could be considered courageous.

The dogs also had their own social relationships. Sometimes, *Tabane* could not join an early morning hunt because she visited *Reu* in the neighboring camp (Camp Q). *Reu* visited *Tabane* at times. I also observed that when *Chomoo*, rejected by *Tabane*, tried to mate with *Chogena*. *Buresu* became furious and bit *Chomoo*.

There were some dogs, including *Tsueta*, *Buresu*, and *Gorane* (female), who returned to the camp on their own during a hunt. It is not clear why *Buresu*, who was usually enthusiastic about a hunt, would abandon it.

Table 3 shows original and present dog ownership in Camp K. Eleven dogs out of 15 participated in hunting. *Buare* (female) and her offspring made up more than 40% of the total number of hunting dogs. Among *Buare*'s offspring, *Tabane*, *Narane*, and *Buresu*, weighing 13.5–18.5 kg, were born on the same day and participated in hunting, whereas *Fox* (female) and *Rikinsu* (female) weighing 5.5–6.0 kgs were born later and did not hunt.

As for the number of dogs owner, N owned seven; D, four; and Ki, Ka, Ku, and T owned one each. All the dogs belonged to the residents of Camp K. *Gorane* was obtained through a father-daughter relationship, *Chomoo* was obtained from friends in another camp. The majority of the dogs, however, were given to D and

Table 3. The original and present dog ownerships in Camp K.

Dog's Name	Sex	Present Owner	Original Owner	Weight (kg)	Mother's Name
<i>Tabane</i>	♀	N	?	18.5	<i>Buare</i>
<i>Narane</i>	♀	N	?	13.5	<i>Buare</i>
<i>Reizen</i>	♂	D	from N	10.0	<i>Kouti</i>
<i>Konta</i>	♀	D	from N	8.5	<i>Kouti</i>
<i>Gorane</i>	♀	D	from K	6.0	<i>Tsetana</i>
<i>Buresu</i>	♂	D	from N	15.0	<i>Buare</i>
<i>Chomoo</i>	♂	Ki	?	13.0	?
<i>Chogena</i>	♀	Ka	?	?	?
<i>Tsueta</i>	♂	N	from J	14.0	<i>Tsetana</i>
<i>Buare</i>	♀	N	?	15.0	?
<i>Pasport</i>	♀	Ku	from K	?	<i>Chogena</i>
<i>Fox</i>	♀	N	?	5.5	<i>Buare</i>
<i>Rikinsu</i>	♀	T	from N	6.0	<i>Buare</i>
<i>Rekesu</i>	♀	N	?	8.0	<i>Tabane</i>
<i>Tama:ha</i>	♂	N	?	6.5	<i>Buare</i>

T by N, and to Ku from her mother, within the camp, when they were puppies. The dogs in Camp K was composed mostly of those born within the camp, with a small number transferred from other camps.

Most of the dogs owned by D and N died in the period between 1988 and 1989. *Buresu* was killed by a lion, *Tabane* died after having her side cut open by a gemsbok's horn, and *Chogena* was bitten to death by foxes when she fell into a hole on a fox hunt. *Rikinsu* refused to take part in hunting, so T strangled her to death with a rope used to tie things onto the donkeys. Subsequently, during the winter of 1988, *Reizen*, *Konta*, *Gorane* and *Rekehe* died of unknown causes, as did *Fox* and *Tamaha*, during the rainy season. The life span of dogs used in hunting was surprisingly short. Of the eleven dogs used for hunting in August 1987, only one, *Tseta* owned by A, survived until 1990, discounting *Pasport*, which had been traded for a male goat.

However, D and N not only exchanged their own male goats with dogs, they also brought hunting dogs from other camps. In other words, they would continue to hunt with dogs even if they had to purchase them.

HUNTING GROUND UTILIZATION AND ITS CHANGE

1. Hunting Ground Utilization

Figure 5 shows hunting ground utilization around the ≠Kade area. The hunting ground spreads radially in various directions, except to the northwest, from each camp. The hunting grounds are situated at about 50–60 km toward the northeast to south, about 20 km to the southwest, and 40 km to the north. The total area is about 5,000 km².

The hunting grounds can be classified into two areas according to the hunting method: one in which hunting with dogs was carried out, and the other in which hunting on horseback were frequently carried out (Ikeya, 1989). It is apparent from Figure 5 that the latter were carried out more frequently than the former throughout the area.

From Figure 5, we see the major hunting grounds: Camp T to the south, Camp F to the southwest, Camp H to the north, Camp K to the northeast, and Camp U to the east. The hunting ground of each camp was for the most part fixed, and it may be said that there was an agreement among the camps to have separate hunting grounds. The following information would imply that such agreements existed.

There was one case in which three hunters from three different camps went hunting separately on the same day, September 8, 1987. The hunter from Camp A caught a kudu while hunting on horseback in the southwest, the hunter from Camp U killed a gemsbok while hunting with dogs in the southeast, and the hunter from Camp K killed a hartebeest while hunting with dogs in the northeast. As there had been some sporadic rainfall, the first during my stay since early August, the three hunters had gone hunting, presuming that game would come closer to their camps. From this we can see that separation in space use clearly exists for hunters.

There also was an example of a number of camps having temporal separation of

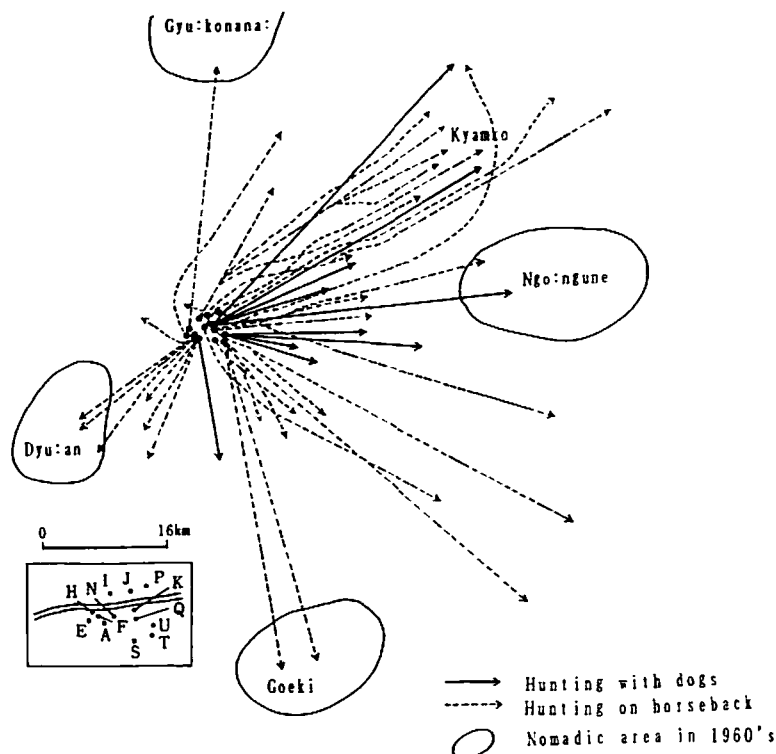


Fig. 5. The form of hunting ground utilization in the Kade area.

their hunting ground in Kyamko in the northeast. On August 18, a group from Camp J, knowing that the hunter of Camp Q had gone to Kyamko, went to Karashua, to the east of Kyamko, but could not find any game, and went to Kyamko after all to hunt. A Kgalagadi group from Camp N delayed their hunting trip to Kyamko by several days, but nevertheless encountered the group from Camp Q.

Thus, three different groups had selected Kyamko as their hunting ground. The popularity of the area was mainly because elands and gemsboks concentrate in here during that period. The last group encountered yet another group composed of the Kgalagadi people not so familiar with the hunting ground. This case indicates that the temporal separation of hunting grounds does not always lead to actual segregation of different teams.

Among the San, each camp tended to practice either of hunting with dogs or hunting on horseback, so that hunting grounds may be separated effectively. However, there are cases in which hunting ground overlap occurred with the Kgalagadi, who are not familiar with the area.

II. Change in the Hunting Grounds

In the ≠Kade area the hunting grounds in 1982 had shifted from that in 1987. I will examine the factors involved in this change.

According to a report by Osaki, the size of the hunting group in ≠Kade was 5,000 km² in 1982. It had enlarged greatly, compared with the former activity range of the group who had inhabited the ≠Kade area permanently. One of the factors for this enlargement of the hunting ground was the increase in the number of hunters, who began to live together. The hunters were forced to go farther to hunt, because they had caught virtually all the animals near the camps (Osaki, 1984).

The area of the hunting ground in 1987 was almost the same as that in 1982. However, there was a change in the direction. Hunting was not seen in Ka in the north, where a watering place was located (Osaki, 1984), but the hunting grounds had expanded to the northeast and to east. Observation made in mid-November 1987, revealed that the pump at the watering place installed by the Wildlife Bureau was not working, and the grass in the area was yellow, in contrast to the green grass in the southeast area. This suggests that the San knew well the distribution of animals as influenced by annual change in rainfall, and changed their hunting ground accordingly.

III. Spatial Perceptions with Regard to Hunting Grounds

The San have various kinds of spatial perception. When they walked at night on their way back from hunting, they used the stars in the sky, the shape and location of trees on the horizon or the distribution of wooded areas as important landmarks. I have attempted to understand their spatial perception of the hunting grounds by analyzing the place names which I found easiest to grasp as part of their mental map. I have drawn a map (see Fig. 6) based upon the place names I obtained directly from the San hunters during the hunt, as well as overheard information on places in various directions.

By analyzing the distribution and characteristics of the named place we can understand the peoples' perception of the land.

The named places are concentrated in the ≠Kade area. Every resident is aware of what lies in each direction. North is in the direction of Piper pan located 80 km away, east is in the direction of Gyom about 130 km away, south-east is in the direction of Menoatse 100 km away, and west is in the direction of a point several tens of kilometres away. In particular, there is a concentration of named places to the area stretching from the north-east to the south-east. Furthermore, if we look at this map in the context of the hunting grounds previously mentioned, it is possible to suggest that there is a close relationship between the concentration of named place and hunting activities.

There are always names attached to places where water is available inside pan. This is because such places are of crucial importance to securing water in the past when the San led a nomadic lifestyle. On the other hand, there are large areas without any name. These are easily indicated in reference to the existing names, such as

DISCUSSION

Hunting with spears and dogs was, in the 1960's, secondary to hunting with bows and arrows or trapping. However, hunting with bows and arrows has declined in recent years, and that with dogs has become more prominent.

In 1983, Chu: \neq uma assisted the filming in the \neq Kade area by Mr Apollo and purchased a horse from a Kgalagadi with the cash earned, supplemented by the goats he had. But, like other hunters in his camp he preferred hunting with dogs to hunting on horseback. In 1984, he did not ride the horse, but put his efforts into hunting with bows and arrows (Sugawara, 1988). As of 1987, he mostly hunted with dogs. Thus, his case represents a good example of the shift from hunting with bows and arrows to that with dogs. There also seem to be a specialization in the hunting method each camp employs. Some camps mainly hunted on horseback whereas others hunted with dogs. The following reasons may be responsible for such specialization in the hunting method.

The meat gained from hunts with dogs belongs only to the owners of the dogs that were involved in the hunt and is never distributed equally among those taking part in the hunt. Because of this, we can say that Osaki (1990) is mistaken in his interpretation that the maintenance of equality among the camp members is the reason for the increasing popularity of hunting with dogs. Instead, I propose other reasons for the increase of hunting with dogs. The people give their surplus maize received from the government to their dogs, which has led to the dramatic increase in their number.

Secondary, the skills to ride a horse properly and to corner an animal on horseback are extremely difficult, and can not be learned easily by middle-aged or older hunters. There is also a mental factor involved. A hunting method introduced by the Kgalagadi, who do not walk any distance, hunting on horseback does not suit the temperament of the San. Thirdly, hunts with dogs are suited for and provide the hunter with such small-and medium-sized animals as jackals and wild cats, the hides of which are used as materials for making handicraft for sale (Ikeya, 1994).

Also, in the example of the two gemsbok kills, the owners of the dogs took a roughly equal amount of dried meat. Each man used the dried meat: for food, for gifts and for cash sale. The ratio of each use was 14 to 22 to 63. In this case, the meat from one gemsbok brought in was between 50 and 60 pula (Ikeya, 1995, in press). From this I believe that hunting with dogs is carried out to facilitate gift-giving as well as to acquire food and cash revenue. The infiltration of commercial economy has encouraged dog hunting among the San to develop from subsistence hunting to a more commercially orientated hunting for meat and hides for sale to outsiders.

NOTES

- (1) Lee (1979: 208) pointed out that trapping was rare during the rainy season because the rain ruined the delicate trigger mechanism.

- (2) Small dogs, used in hunting with bows and arrows among the Mbuti Pygmies, were raised as hunting dog (Harako, 1976).

ACKNOWLEDGMENTS This study is a part of the field research on "A Comparative Study of Ecological Anthropology on African Hunter-Gatherers" supported by the 1987 Grant-in-Aid for Overseas Scientific Research from the Japanese Ministry of Education, Science and Culture. I would like to thank the Office of the President of the Botswana Government for permission to undertake the investigations. I am greatly indebted to Dr. Jiro Tanaka, Professor of the Center for African Area Studies, Kyoto University, for his suggestions and encouragement, Dr. Kazuyoshi Sugawara, Kyoto University for his valuable support. I also wish to express my heartfelt thanks to many G/wi and //Gana friends for their generosity and patience and the valuable data they provided me.

REFERENCES

- Harako, R. 1976. The Mbuti as hunters a study of ecological anthropology of the Mbuti Pygmies (1). *Kyoto University African Studies*, 10: 37-99.
- Ikeya, K. 1989. Hunting activity of the San in the Central Kalahari (in Japanese). *Kikan-Jinruigaku*, 20 (4): 284-329.
- 1993. Goat Raising among the San in the Central Kalahari. *African Study Monographs*, Vol. 14 (1): 39-52.
- 1994. Development of the remote rural area in Botswana (in Japanese). *Aziakeizai*, 35 (11): 54-69.
- 1995 (in press). From subsistence to commercial hunting: A case study of the Bushman (in Japanese).
- Lee, R. B. 1979. *The !Kung San: Men, Women, and Work in a Foraging Society*. Cambridge University Press, London.
- Osaki, M. 1984. The social influence of change in hunting technique among the Central Kalahari San. *African Study Monographs*, Vol. 5: 49-62.
- 1990. The influence of sedentism on sharing among the Central Kalahari hunter-gatherers. *African Study Monographs*, Suppl. Issue, No. 12: 59-87.
- Silberbauer, G. B. 1965. Report to the government of Bechuanaland on the Bushman survey. Bechuanaland Government, Gaborones.
- 1981. *Hunter and Habitat in the Central Kalahari Desert*. Cambridge University Press, London.
- Sugawara, K. 1988. Visiting relations and social interactions between residential groups of the Central Kalahari San: hunter-gatherer camp as a microterritory. *African Study Monographs*, Vol. 8 (4): 173-211.
- Tanaka, J. 1969. The ecology and social structure of Central Kalahari Bushmen. *A Preliminary Report. Kyoto University African Studies*, 3: 1-26.
- 1971. *The Bushmen*. Shisakusha, Tokyo (in Japanese).
- 1978. *Hunters of the Desert*. Chuokoronsha, Tokyo (in Japanese).
- 1980. *The San, Hunter-Gatherers of the Kalahari: A Study in Ecological Anthropology*. University of Tokyo Press, Tokyo.
- 1987. The recent changes in the life and society of the Central Kalahari San. *African Study Monographs*, Vol. 7: 37-51.

———Accepted *November 4, 1994*.

Author's Name and Address: Kazunobu IKEYA, *Faculty of Letters, Hokkaido University, N10, W7, Kita-ku, Sapporo-shi 060, Japan.*